

NEW SPECIES OF LEGUMINOSAE FROM NAYARIT, MEXICO

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During 1988–1993, the National Herbarium (MEXU) of the Instituto de Biología UNAM obtained about 15,000 collections as a result of an intensive program of botanical explorations in the state of Nayarit, Mexico, within the framework of the project entitled Flora of Nayarit. The collections included several species new to science. Of these, three new species of Leguminosae (*Tephrosia microcarpa*, *T. sousae*, and *Rhynchosia elisae*) are here described, and their geographical distribution, ecological attributes, and their recognized relationships are discussed.

Tephrosia microcarpa O. Téllez-Valdés, sp. nov.—TYPE: MEXICO. Nayarit: Mpio. Tepic, a 10 km al NE de Francisco I. Madero, camino a Pochotitán, 21°33'N, 104°48'W, pastizal inducido en bosque de *Quercus* alterado, 4 Feb 1989 (fl, fr), Téllez V. & Flores 11780 (holotype: MEXU!; isotypes: ENCB! MEXU! MICH! MO!). Fig. 1.

Planta perennis, fruticosa, decumbens. Folia (3–) 4.5–14 cm longa, (3–5) 7–9-foliolata. Inflorescentiae terminales et axillares 13–29 cm longae. Flores 1.7–1.9 cm longi; calyx 1.0–1.2 cm longus; lobulus vexillaris 7–7.5 mm longus, laterales 7–8 mm longi, carinalis 8–9 mm longus; corolla roseola; stylus barbatus; ovula 1–2. Legumen 1.2–1.4 cm longum, 0.4–0.5 cm latum; semina 1–2, 2–2.5 mm longa, 1.5 mm lata, oblonga.

Perennial and decumbent subshrub. Stems rounded to slightly angulate, densely strigose to glabrescent with age. Leaves (3–) 4.5–14 cm long; leaflets commonly 7–9, (3–5–) 9 at the base of the inflorescences, 2.7–8 cm long, (0.2–) 0.6–1.5 cm wide, linear, linear-lanceolate, lanceolate, oblong-lanceolate to oblanceolate, apex acute to rounded, truncate or emarginate, mucronate, base acute to rounded, adaxially cinereous-strigose to glabrescent, abaxially densely cinereous-strigose, wooly; stipules 5–9 mm long, 2–4 mm wide, broadly oval to subreniform, glabrous but striated adaxially. Inflorescences of terminal and axillary fasciculate pseudoracemes 13–29 cm long; primary bracts 4–6 mm long, 5–9 mm wide; pedicels 5–8 mm long. Flowers 1.7–1.9 cm long; calyx 1.0–1.2 cm long, vexillar lobe 7–7.5 mm long, ovate-lanceolate, subulate, lateral lobes 7–8 mm long, lanceolate-subulate, carinal lobes 8–9 mm long, lanceolate-subulate. Corolla bright pink to deep red with a yellowish green spot at the base of banner; banner ca. 1.3 cm high, 1.3–1.4 cm wide, the claw 5 mm long, suborbicular, dorsally finely cinereous-strigose; wings ca. 1.1 cm long, ca. 0.5 cm wide, the claw 0.4 cm long, oblong, auriculate; keel ca. 1.0 cm long, ca. 0.7 cm deep, the claw 0.3 cm long. Staminal tube 1.1–1.2 cm long, vexillar stamen coherent with the tube at the inferior half, free at the base, with a prominent thickening close to the base. Ovary ca. 5 mm long, cinereous-strigose,



FIG. 1. *Tephrosia microcarpa* (Téllez V. & Flores 11780). a. Branch with leaves, flowers, and fruits. b. Bracteole. c. Calyx. d. Banner. e. Wing. f. Keel. g. Staminal tube and barbate style. h. Legume with the staminal tube persistent on the styler region. i. Opened legume with seeds. j. Seed.

the style barbed over the entire surface; ovules 1–2. Legume 1.2–1.4 cm long, 0.4–0.5 cm wide, subglobose or oblong to elliptic, densely strigose to hirsutulous, appearing wooly; seeds 1–2, 2–2.5 mm long, 1.5 mm wide, 1–1.5 thick, oblong, light brown, smooth.

ADDITIONAL SPECIMENS EXAMINED. **Mexico.** NAYARIT: Mpio. Tepic, a 8.6 km al SW de Pochotitán, pastizal derivado de encinar con *Aeschynomene*, *Byrsonima*, *Calliandra*, *Asclepias*, *Croton*, *Spermacoce*,

Compositae, etc., 19 Jun 1987 (old fr), Téllez V. & Miller 10434, 10441, 10452 (MEXU), 20 Jun 1987 (fl, fr), 10522 (MEXU).

Tephrosia microcarpa is easily recognized among the rest of the American species of the genus by its small 1–2-seeded legume. This character is only shared with *T. nubica* (Boiss.) Baker and *T. polyphylla* (Chiov.) Gillet (sect. *Pogonostigma*) (Gillet 1965) from Eastern Africa to Arabia. Accordingly, there is no evidence from Wood's revision (1949) that can suggest a possible relationship of this new species to an American one.

Tephrosia microcarpa is phytogeographically interesting. The discovery of this species in Mexico reinforces the idea of a Laurasian origin at least for the Mexican species of *Tephrosia*. The idea is supported by two points. 1) There are several East African and mainly Asiatic species that are morphologically very similar to the Mexican ones. Ninety percent of them belong to subg. *Barbistylia*, as do many other species from those parts of the world. 2) The West African and South American species are closely related and basically belong to subg. *Tephrosia*. These two arguments suggest that *T. microcarpa* is a palaeoendemic species, and that subg. *Barbistylia* originated in the Old World and subsequently migrated from Asia through Europe and North America to western Mexico. This type of pattern has already been suggested by Sousa and Delgado (1993) for other genera of Mexican legumes.

Tephrosia sousae O. Téllez-Valdés, sp. nov.—TYPE: MEXICO. Nayarit: Mpio. Ruiz, a 7 km al E de El Venado camino a Real del Zopilote, bosque de *Quercus*, 7 Feb 1985 (fl, fr), Téllez V. & Magaña 8272 (holotype: MEXU!; isotypes: ENCB! MEXU! MICH! MO!). Fig. 2.

Planta fruticosa, perennis. Folia (5–7–) 9–17-foliolata, 12.7–19.6 cm longa. Inflorescentiae terminales foliis oppositae, 12.5–34 cm longae. Flores 1.3–1.9 cm longi; calyx 5–6 mm longus; lobulus vexillaris 1–1.5 mm longus, laterales 2–2.5 mm longi, carinalis 2.5–3 mm longus; corolla roseola; stylus barbatus; ovula 8–9. Legumen 4.3–5.1 cm longum, 0.5–0.6 cm latum; semina 8, 2–3 mm longa, 1.5–2 mm lata, oblonga.

Sympodial shrub 1–2.5 m tall. Stems, rachis of the leaves, and axes of inflorescences angulate to prominently sulcate. Leaves 12.7–19.6 cm long, sessile to rarely with a short petiole 2–7 mm long; leaflets commonly 9–17 (5–7 at base of inflorescences), (1.1–) 3.2–7.6 cm long, (0.4–) 0.8–2.9 cm wide, lanceolate, oblong-lanceolate, ovate-lanceolate to linear-lanceolate, apex acute, mucronate, base rounded to acute, sometimes revolute, the lower leaflets ovate, cordate to suborbicular, adaxially glabrous to spreading, strigulous on the principal nerve, abaxially densely cinereous-strigose; stipules 6–7 mm long, 0.5–1 mm wide, linear-subulate to linear-lanceolate, striate. Inflorescences of fasciculate pseudoracemes 12.5–34 cm long, terminal and apparently opposite to the leaves; flowers 2–4 per node, pedicels 4–7 mm long. Flowers 1.3–1.9 cm long; calyx 5–6 mm long, campanulate, vexillar lobes 1–1.5 mm long, lateral lobes 2–2.5 mm long, carinal lobes 2.5–3 mm long. Corolla pink; banner 1.3–1.6 cm long, 1.3–1.5 cm wide, the claw 0.4 cm, suborbicular; wings 1.2–1.4 mm long, 0.3–0.45 cm wide, the claw 0.2–0.3 cm long, oblong; keel 1.1–1.2 cm long, 0.6 cm deep, the claw 0.3–0.4 cm long. Staminal tube 1.0–1.2 cm long, the vexillar stamen free. Ovary strigulous, ovules 8–9. Legume 4.3–5.1 cm long, 0.5–0.6 cm wide, straight to slightly recurved at apex, spreading-strigose;

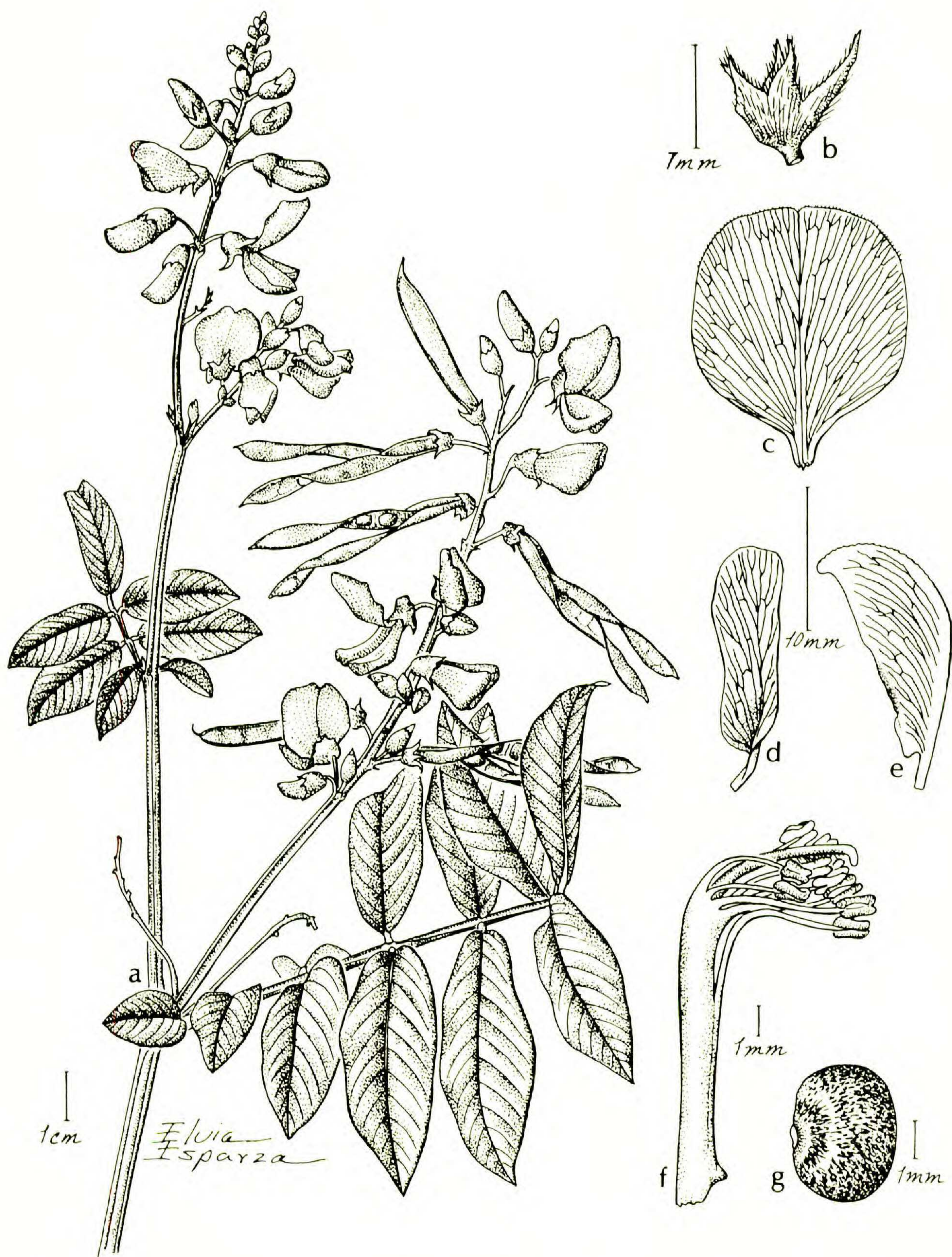


FIG. 2. *Tephrosia sousae* (Téllez V. & Magaña 8272). a. Branch with leaves, flowers, and fruits. b. Calyx. c. Standard. d. Wing. e. Keel. f. Staminal tube, showing anthers and barbate style. g. Variegated seed.

seeds 8, 2–3 mm long, 1.5–2 mm wide, 1.5–2 thick, oblong, light-brown, variegated with gray, smooth.

ADDITIONAL SPECIMENS EXAMINED. **Mexico.** NAYARIT: Mpio. Ruiz, a 7 km al E de El Venado camino a Real del Zopilote, bosque de *Quercus*, 7 Feb 1985 (fl, fr), Téllez V. & Magaña 8294 (MEXU).

Tephrosia sousae is very similar to *T. mexicana* Wood in its habit, sympodial growth, and leaflet form and pubescence. It has larger and branched inflorescences, shorter lateral and carinal calyx lobes, and narrower fruits than *T. mexicana*, and very often sessile leaves. Also, *T. sousae* is endemic to the Sierra Madre Occidental in the state of Nayarit, and *T. mexicana* is endemic to the Transvolcanic Belt in the state of México.

The name honors Mario Sousa Sánchez, student of Mexican legumes and teacher of many Mexican botanists.

Rhynchosia elisae O. Téllez-Valdés, sp. nov.—TYPE: MEXICO. Nayarit: Mpio. Tepic, Km 5.4 de la terracería a El Cuarenteño, camino que empieza a 500 m al W de El Izote, carretera a Jalcocotán, 21°29'N, 104°59'W, bosque mesófilo, 29 Jan 1990 (fl), Téllez V. 12583 (holotype: MEXU!; isotypes: ENCB! MEXU! MICH! MO!). Fig. 3.

Herba volubilis, scandens. Folia 3-foliolata, (6–) 8–21 cm longa. Stipulae 9–12 mm longae, 4–7 mm latae, ovato-lanceolatae, acuminatae. Inflorescentiae axillares (2–) 4–14 cm longae. Flores 1.0–1.2 cm longi; calyx 8–11 mm longus; lobulus vexillaris 0.85–1.1 cm longus, laterales 0.8–1.0 cm longi, carinalis 0.9–1.1 cm longus; corolla flava. Legumen 1.5–2.0 cm longum, 0.8–1.1 cm latum; semina immatura 1–2, fusca.

Twining herb. Stems lineate to angulate, hirsutulous to densely hirsute, ferruginous, cinereous, or blackish. Leaves (6–) 8–21 cm long; leaflets 3, lanceolate, lateral asymmetric with the principal nerve not central, 3-nerved from petiole, apex acute to acuminate, mucronate, base subcordate; petiole 2.8–7.7 cm long; stipules 0.9–1.2 cm long, 0.4–0.7 cm wide, ovate-lanceolate, acuminate, red-brown, strigose, glabrous but lineate adaxially. Inflorescences of axillary racemes (2–) 4–14 cm long, shorter than the leaves; pedicels 2–3 mm long; bracts 1.2 cm long, 0.7 cm wide, ovate to deltate or triangular, acute, hirsute with dark brown to black hairs; glabrous but striate adaxially, deciduous. Flowers 1.0–1.2 cm long; calyx 0.8–1.1 cm long, campanulate; vexillar lobe 0.85–1.1 cm long, fused for 3/4 of its length, the apical 3 mm free, lateral lobes 0.8–1.0 cm, carinal lobes 0.9–1.1 cm long, lanceolate, acute to acuminate; banner 1.1–1.2 cm long, 1.1–1.2 cm wide, the claw 0.2–0.3 cm, suborbicular; wings 1.0–1.1 cm long, 0.25–0.35 cm wide, the claw 0.3 cm, oblong; keel 7–8 mm long, 6–7 mm deep, the claw 3 mm. Staminal tube 6–7 mm long (1.0 cm long including filaments); stamens diadelphous, 9 connate, the vexillar stamen free. Ovary densely hirsute, style glabrous, slightly striate or lineate, curved 90°, thickened in 2/3 parts of its length; ovules 1–3. Immature legume 1.5–2.0 cm long, 0.8–1.1 cm wide, dark brown, hirsute-ferruginous; immature seeds 1–2, light brown.

ADDITIONAL SPECIMENS EXAMINED. **Mexico.** NAYARIT: Mpio. Tepic, Km 10–13 de la terracería a El Cuarenteño, camino que empieza a 400 m al W de El Izote, carretera Tepic–Miramar, bosque mesófilo de *Pinus*, *Quercus*, *Carpinus*, *Clethra*, *Cornus*, etc., 4 Jan 1986 (fl) Téllez V. 9535 (MEXU), 29 Mar 1987 (young fl, fr) Téllez V. 10026, 10038 (MEXU).

Rhynchosia elisae is closely related to *R. tarphantha* Standl. and *R. reticulata* (Sw.) DC. The three species belong to section *Arcyphyllum* Torrey & A. Gray. They share a subfoliaceous to foliaceous calyx; the lobes are free from the base, lanceolate, and equal or exceeding the banner. *Rhynchosia elisae* differs from

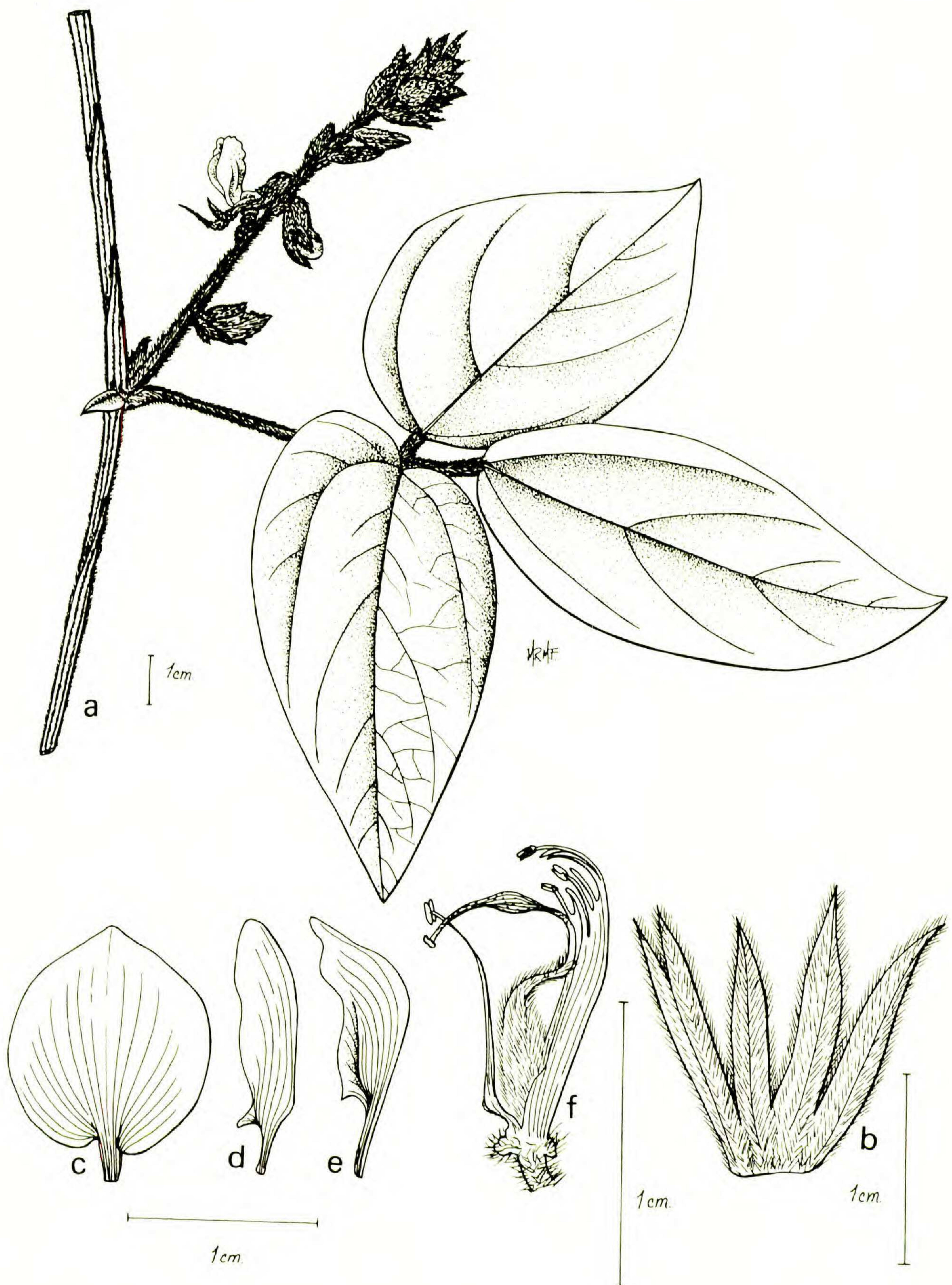


FIG. 3. *Rhynchosia elisae* (Téllez V. 12583). a. Branch with leaf and young inflorescence. b. Calyx. c. Banner. d. Wing. e. Keel. f. Staminal tube, the vexillary stamen free, with distal portion of style.

R. tarphantha and *R. reticulata* in its ovate-lanceolate to elliptic, acute to occasional long-acuminate leaflets, and the stems (mainly the younger ones) as well as the calyx and bracts are densely hirsute-ferruginous. Also, *R. elisae* has intense yellow flowers and the inflorescences shorter than the leaves.

The species is dedicated to my wife Elisa Poo for her help and support.

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